

***Parmops echinatus*, a new species of flashlight fish  
(Beryciformes: Anomalopidae) from Fiji**

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*Abstract.*—A second species of the genus *Parmops* is described from two specimens collected in 440m and 550m respectively in Fiji. *Parmops echinatus* n.sp. is distinguished most prominently from *P. coruscans* in lacking midventral scutes and an external tooth patch on the lateral face of the dentary, and in having papillose ridges on the gular isthmus, 15 dorsal-fin soft rays, 12 anal-fin soft rays, 15 or 16 pectoral-fins rays, 34 pored lateral-line scales and 14 + 17 vertebrae.

The species of the family Anomalopidae were reviewed most recently by McCosker & Rosenblatt (1987). Shortly thereafter, Johnson & Rosenblatt (1988) described the anatomy of the mechanisms of light-organ occlusion in the family, introduced a new genus, and proposed a phylogeny of the family. Since that time two additional genera and species have been described (Rosenblatt & Johnson 1991, Baldwin et al. 1997) bringing the total to six genera and seven species. Except for the two monotypic New World genera, one each in the western Atlantic and eastern Pacific, all known anomalopids have Indo-West-Pacific distributions. Material from Fiji that has become available recently contains a second and larger specimen of *Parmops coruscans* and two specimens of an undescribed species that we refer to *Parmops*. The purposes of this paper are to describe the new species, compare it with and amplify the description of *P. coruscans*, and to modify the generic diagnosis of the genus *Parmops*.

*Parmops echinatus*, new species

Fig. 1

*Holotype.*—USNM 361379, 46.0 mm SL, sex unknown, off Viti Levu, Fiji, west

of Beqa Island and north of Yanuca Island, from a prawn trap in 250 fathoms (440 m) 20 Sept 1983, University of the South Pacific (USP) R/V *Aphareus*.

*Paratype.*—USNM 361380, 88.5 mm SL, sex unknown, off the Suva Barrier Reef, from a prawn trap in 300 fathoms (550m), 9 Jul 1981, USP R/V *Nautilus*. Both specimens now faded and in poor condition.

*Diagnosis.*—A *Parmops* without midventral scutes or an external tooth patch on anterolateral face of dentary near tip, gular isthmus with papillose ridges, posterior supramaxilla comprising one or two autogenous pieces posteriorly, and 5 dorsal-fin spines, 15 dorsal-fin soft rays, 12 anal-fin soft rays, 15 or 16 pectoral-fin rays, 14+17 vertebrae, and 34 pored lateral-line scales.

*Description.*—Counts and measurements, in mm, of the holotype and (paratype): dorsal-fin rays V-1,15 (VI,15); anal-fin rays II,11(II,11); pectoral-fin rays ii12ii (ii11ii); pelvic-fin rays I,5 (I,5); caudal-fin rays 8,10+9,8 (8,10+9,8); branchiostegals 8 (8); gill rakers 8+22 (8+21); pored lateral-line scales 34 (34); scales above lateral line 8 (8); scales between pelvic girdle and anus 12 (12); vertebrae 14+17. Head length



Fig. 1. Holotype of *Parmops coruscans*, USNM 361379, 46 mm SL, right side reversed.

18.8 (28.6); head depth 17.4 (29.4); head width 10.0 (19.9); interorbit width 5.0 (8.8); predorsal length 20.8 (36.5); prepelvic length 18.1 (33.5); body depth 18.3 (38.5); caudal-peduncle depth 4.9 (10.0); caudal-peduncle length 11.8 (28.6); snout length 4.6 (7.0); orbit diameter 8.2 (13.7); light-organ length 8.6 (11.7); light-organ depth 2.7 (5.4); pectoral-fin length 9.5 (23.4); pelvic-fin length 7.9 (15.3).

Body compressed, width of head 1.8 in depth, body depth 1.7 in post-head length. Snout blunt, profile sloping forward with little curvature from occiput. Nostrils above anterodorsal margin of eye, the posterior approximately twice as large as anterior. Mouth strongly oblique, tip of lower jaw at level of mid orbit, upper jaw slightly included. Maxilla extending posteriorly to vertical through anterior  $\frac{1}{3}$  of eye; posteroventral corner not dentigerous, but lightly papillose. Posterior supramaxilla ovoid, with an anterior process; posterior end of supramaxilla comprising one autogenous plate in the holotype, two in the paratype. Anterior supramaxilla much smaller, comprising one piece in the holotype, two in the paratype. No enlarged external teeth on dentaries. Vomer toothless, palatines with bands of teeth. Posterior margin of supraclithrum smooth. Infraorbitals 1–4 enlarged and laterally flared to form ventromedially sloping shelf effectively widening

and deepening subocular pocket that accommodates light organ. Lacrimal with two pores and three larger cavities. Postorbital with two skin-covered openings at corner, followed by three openings, the central the largest. Preopercular canal without bony bridges, except at corner. Mandibular canal with two pores anteriorly followed by trough roofed by bone only at junction with preopercular canal. Canals of cranium apparently entire but not in good condition. A single fleshy papilla on rear margin of orbit. Subocular light organ and shutter as in *P. coruscans* (Johnson & Rosenblatt 1991, fig. 2). Ovoid organ free except at anterior end, rotatable so that luminous face can be rotated downward into pocket formed by flared infraorbitals. Outer margin of adpressed organ well below infraorbital rim. Black elastic shutter membrane attached along lateral margin of suborbital pocket, lying flat on floor of pocket when relaxed, with free margin medially. Scales strongly spinoid, with rows of almost erect spines on exposed portion. Scales on ventral midline not enlarged or scute-like. Head scales is in *P. coruscans*. Gular isthmus with well-developed papillae on transverse ridges. Basal scale sheaths on dorsal- and anal-fin soft rays strongly developed, with a distal enlarged row, covering about 40% of fin. Pseudobranch with about 23 filaments. Spinous dorsal fin low, most spines and soft

rays damaged, as are the anal-fin rays. Pectoral fin angulate, its ventral margin sloping anteriorly. Pelvic fins extending to within about 40% of eye diameter of anus. Color now faded to brown, but undoubtedly black in life.

*Etymology.*—From the Latin, *echinatus*, spiny, with reference to the strongly ctenoid scales and well-developed spination on head and fin rays.

*Occlusion mechanism.*—The light organ and associated structures are as in *P. coruscans*. (See Rosenblatt and Johnson, 1991, pp. 331-332, fig. 2).

*Generic placement.*—*Parmops echinatus* agrees with the character states defining *P. coruscans* given in tables 1 and 2 of Rosenblatt & Johnson (1991), except that there are more epineural bones (see Remarks below), 14+17 vertebrae (vs. 14+16), no external patch of enlarged teeth on dentary, and no midventral scutes. The latter feature requires modification of the diagnosis of the genus provided by Rosenblatt & Johnson (1991), which included "a row of enlarged scutes on the belly." *P. echinatus* is the only member of the family (indeed, for that matter, of the Trachichthyoidei) without midventral scutes or external teeth on the dentary. The latter can be interpreted as a matter of degree, as there are teeth on the dorsal surface of the dentary that are visible anteriorly with the mouth closed, but they do not extend around the anterolateral tip to contact the serrate ridges along the ventral surface of the dentary as in *P. coruscans*. The midventral scales are neither ridged nor enlarged. Considering the ubiquity of scutes and external dentary teeth in trachichthyoids, their absence in *P. echinatus* is most parsimoniously interpreted as the result of independent reversals. With reference to the most recent cladogram of anomalopid genera (Baldwin et al. 1997, fig. 4), *P. echinatus* exhibits four of the five synapomorphies uniting the *Protoblepharon* - *Photoblepharon* clade (the exception being the external dentary tooth patch), the four uniting the *Parmops* - *Photoblepharon*

clade, and lacks the two uniting *Phthanophaneron* with *Kryptophanaron* and the one uniting the latter two genera. Its placement as the sister taxon of *P. coruscans* (and thus within the genus *Parmops*) is supported by the apomorphic expanded infraorbitals and the resultant subocular pocket configuration it shares with that species.

*Remarks.*—The Fiji material includes the second known specimen of *P. coruscans* (USNM 361381), which is considerably larger than the holotype. It was caught off Suva Barrier Reef in 240 fathoms (440 m) in August 1983 in a prawn/Nautilus trap from the USP R/V *Nautilus*. Its counts and measurements in mm are:

Dorsal-fin rays V-I,16; anal-fin rays II, 12; pectoral-fin rays ii13iii; pelvic-fin rays I, 5; caudal-fin rays 10,10+9,10; branchiostegal rays 8; gill rakers 11+23; lateral-line scales 31; scale rows above lateral line 8; vertebrae 14+16. Standard length 66.5; head length 25.2; predorsal length 30.5; prepelvic length 34.5; body depth 34.0; caudal-peduncle length 21.9; caudal-peduncle depth 8.4; head length 25.2; snout length 6.4; eye diameter 11.4; orbit diameter 13.1; light-organ length 8.3; light-organ depth 3.1; pectoral-fin length 17.0; pelvic-fin length 15.2; first dorsal spine length 4.5; fifth dorsal spine length 6.4; upper caudal-lobe length 17.6; middle caudal-fin ray length 8.3.

The larger specimen agrees well with the description of the much smaller holotype, except that the pectoral fin is proportionately longer, (about 1.2, rather than 1.5, in the head), the second anal-fin spine is fully transformed and unsegmented, the posteroventral corner of the maxilla is strongly dentigerous, and the anterior supramaxilla is fused to the maxilla. The median fins of the holotype are damaged. In the present specimen the borders of the soft dorsal and anal fins slope evenly backward and the caudal fin is forked, as is typical for the family.

Johnson & Rosenblatt (1988, table 1) reported incorrectly that *Phthanophaneron*,



*Kryptophanaron*, and *Photoblepharon* have epineural bones (their "epipleural ribs") on only the first two vertebrae. There is considerably more variability. Patterson & Johnson 1995 (table 7) recorded additional ossified epineurals on V8–12 in *Photoblepharon* and Baldwin et al. (1997) reported them on V9–14 in *Protoblepharon*. *Kryptophanaron* may have either no ossified epineural ligaments or partial ossification of those on V12 or V12–13. Both species of *Parmops* have ossified epineurals extending to V13–14; in both specimens of *P. echinatus* and the holotype of *P. coruscans*, they begin on V8 whereas in the larger specimen of *P. coruscans* they appear to form a continuous series from V1 to V14.

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